

CLAIMS

1. A midsole insert for a shoe, comprising:
a body having a heel portion, a midfoot portion, and a forefoot portion;
a plurality of grid systems located on the midsole insert, wherein each grid system includes a plurality of openings cut into the midsole insert, forming a lattice pattern; and
wherein the midsole insert is constructed and arranged to attach directly to an upper during a manufacturing step, to secure the shape of the upper on a last.
2. The midsole insert of claim 1, in combination with an upper, wherein the midsole insert is stitched at its periphery directly to the upper.
3. The midsole insert of claim 2, wherein the midsole insert is stitched to the upper in a zigzag chain stitch pattern.
4. The midsole insert of claim 1, wherein the thickness of the perimeter of the midsole insert is less than the thickness of the body of the midsole insert.
5. The midsole insert of claim 4, further comprising a groove extending substantially about the perimeter of the midsole insert, the groove providing a region to attach a shoe upper directly to the midsole insert.
6. The midsole insert of claim 1, wherein a first grid system is located on the heel portion and a second grid system is located on the forefoot portion, and
wherein the midsole insert is formed of at least two materials having different hardnesses, such that a majority of the heel portion and midfoot portion have a greater hardness than the forefoot portion.

7. The midsole insert of claim 6, further comprising a third grid system located on the midfoot portion, wherein a portion of the third grid system has an increased thickness relative to a section of the midfoot portion without a grid system.
8. The midsole insert of claim 6, wherein the forefoot portion and a frame extending about the perimeter of the midsole insert are integrally molded from a first material, and the heel and midfoot portions are integrally molded together from a second material.
9. The midsole insert of claim 8, wherein the first material is injection molded into the shape of the forefoot portion and the frame extending about the perimeter, and the second material is co-injected molded into the shape of the heel and midfoot portions, upon the first material.
10. The midsole insert of claim 8, wherein the durameter of the first material is approximately within the range of 92-98A, and the durameter of the second material is approximately within the range of 57-63D.
11. The midsole insert of claim 10, wherein the durameter of the first material is approximately 95A.
12. The midsole insert of claim 10, wherein the durameter of the second material is approximately 60D.
13. A midsole insert for a shoe, comprising:
 - a body having a heel portion, a midfoot portion, and a forefoot portion;
 - a first grid system located on the heel portion and a second grid system located on the forefoot portion, wherein each grid system includes a plurality of openings which form a lattice pattern; and

wherein the midsole insert is formed of at least two materials having different hardnesses, such that a majority of the heel portion has a greater hardness than the forefoot portion.

14. The midsole insert of claim 13, further comprising a third grid system located on the midfoot portion, wherein the grid system includes a plurality of openings which form a lattice pattern.

15. The midsole insert of claim 14, wherein a portion of the third grid system located on the midfoot portion has an increased thickness relative to a section of the midfoot portion without the grid system.

16. The midsole insert of claim 15, wherein at least a portion of the third grid system includes ridges located on the underside of the midsole insert.

17. The midsole insert of claim 15, wherein the portion of the increased thickness of the third grid system extends longitudinally from a position adjacent the rear of the forefoot portion to a position adjacent the heel portion to provide increased resistance to torsional motion.

18. The midsole insert of claim 13, wherein a portion of the first grid system located on the heel portion has an increased thickness relative to a section of the heel portion without the grid system.

19. The midsole insert of claim 18, wherein at least a portion of the first grid system includes ridges located on the underside of the midsole insert.

20. The midsole insert of claim 14, wherein the second grid system located on the forefoot portion is wider than either the first or third grid system.

21. The midsole insert of claim 13, further comprising a raised toe section formed on the underside of the forefoot portion which provides additional support to a toe.
22. The midsole insert of claim 13, further comprising a raised V-shaped section formed on the underside of the forefoot portion which aligns and positions the midsole insert with respect to a mold used to form the lattice pattern of the grid systems.
23. The midsole insert of claim 13, wherein the forefoot portion and a frame extending about the perimeter of the midsole insert are integrally molded from a first material, and the heel and midfoot portions are integrally molded together from a second material, wherein the stiffness of the first material is less than the stiffness of the second material.
24. The midsole insert of claim 23, wherein the thickness of the frame extending about the perimeter of the midsole insert is less than the thickness of the body of the midsole insert.
25. The midsole insert of claim 24, further comprising a groove extending substantially about the perimeter of the midsole insert, the groove providing a region to attach a shoe upper directly to the midsole insert.
26. The midsole insert of claim 13, wherein the first grid system is integrally molded with the heel portion of the midsole insert and the second grid system is integrally molded with the forefoot portion of the midsole insert.
27. The midsole insert of claim 14, wherein the third grid system is integrally molded with the midfoot portion of the midsole insert.

28. The midsole insert of claim 14, wherein the midsole insert has a lateral side and a medial side, and the third grid system located on the midfoot portion is positioned offset to the medial side of the midsole insert rather than the lateral side.
29. The midsole insert of claim 14, wherein the openings forming the lattice pattern on the first grid system on the heel portion are larger than the openings forming the lattice pattern on the third grid system on the midfoot portion.
30. The midsole insert of claim 13, wherein the size and shape of the plurality of openings in at least one grid system are non-uniform.
31. A method of manufacturing a shoe comprising the steps of:
providing an upper, a midsole insert with at least one grid system including a plurality of openings forming a lattice pattern, a sock lining, a midsole and an outsole;
forming and shaping the upper onto a last;
attaching the midsole insert directly to the upper to secure the shape of the upper on the last;
attaching the midsole to at least one of the midsole insert and the upper;
attaching the outsole to at least one of the midsole, the midsole insert and the upper;
separating the last from the upper; and
positioning a sock lining on the topside of the midsole insert.
32. The method of 31, wherein the midsole insert is stitched at its periphery directly to the upper.
33. The method of claim 32, wherein the midsole insert is stitched to the upper in a zigzag chain stitch pattern.
34. A shoe comprising:
a textile and synthetic upper;

a midsole insert having a heel portion, a midfoot portion, and a forefoot portion, attached directly to the upper, wherein at least part of the forefoot portion is made of a first material and at least part of both the heel and midfoot portions are made of a second material, wherein the stiffness of the first material is less than the stiffness of the second material;

an outsole attached to the underside of the midsole insert;

a sock lining inserted into the shoe positioned directly on the topside of the midsole insert; and

wherein the midsole insert further includes a plurality of grid systems located on the midsole insert, wherein each grid system includes a plurality of openings forming a lattice pattern on the midsole insert.